Remarks

The Office Action mailed November 22, 2004 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 1-24 are now pending in this Application, as herein amended. No new matter has been added and no claims have been cancelled.

A request for a 3 month extension of time to extend the time to respond to May 22, 2005 and an authorization to charge a deposit account is enclosed.

Various Claims have been amended to recite "A transparent or translucent sintered ceramic sintillator composition comprising ...". Applicants intend that "transparent or translucent sintered ceramic" be given patentable weight and that the claims be substantively examined consistent with Applicants' intent. If the Office does not consider that the phrase "transparent or translucent sintered ceramic" in the Claims can be given patentable weight as written, it is requested that the Office contact the undersigned to suggest an Examiner's Amendment giving the intended language patentable weight.

The Office noted that the listing of references in the specification is not a proper information disclosure statement and asserted that unless references contained in the specification have been cited by the Examiner on form PTO-892, they have not been considered.

It is believed that the Office is referring herein to the listing of references in Paragraph [0004] of the Application, which includes U.S. Patent 4,421,671, 4,473,513, 4,525,628, and 4,783,596, some of which are also referred to elsewhere in the specification. These references were previously considered in either U.S. Patent No. 6,630,077 or in U.S. Patent No. 6,793,848, both of which are cited in Paragraph [0001] of the Application as originally filed (U.S. Patent No. 6,793,848 was cited by its application number, as this patent had not yet issued at the time of filing of the present Application). The present Application is a continuation-in-part of these applications. In accordance with M.P.E.P. 609(I)(A)(2), the Office is obligated to consider these references whether or not they are cited in a separate

paper, and thus, Applicants are entitled to assume that these references have been considered and need not resubmit these references in a separate paper.

> **2. Continuation Applications or Divisional Applications, Filed Under 37 CFR 1.53(b) or Filed Under Former 37 CFR 1.60, or Continuation-In-Part Applications Filed Under 37 CFR 1.53(b):**
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> The examiner will consider information which has been considered by the Office in a parent application when examining (A) a continuation application filed under 37 CFR 1.53(b) or filed under former 37 CFR 1.60, (B) a divisional application filed under 37 CFR 1.53(b) or filed under former 37 CFR 1.60, or (C) a continuation-in-part application filed under 37 CFR 1.53(b). *>A listing of the< information need not be resubmitted in the continuing application unless the applicant desires the information to be printed on the patent.

Applicants are aware that the references cited in the parent applications may not be printed on the patent. Nevertheless, in view of the statement by the Office in this Application, it is requested that the Office confirm that it has fulfilled its obligations under M.P.E.P. 609(I)(A)(2) to consider this information in examining the current Application. It is noted that both parent applications had issued by the time the Office Action was mailed, and thus all information considered in examining the parent applications was available to the Office at the time this Application was examined.

Although Applicants need not do so, Applicants have listed those references not previously cited in this Application in a separate paper as an Information Disclosure Statement mailed herewith.

The objection to the Disclosure's citation of the status of application 10/316,151 in paragraph [0001] is respectfully traversed.

The objection indicated that the status of application 10/316,151 required updating. The Specification has been properly amended to reflect the issuance of this application as a patent.

For the above reasons, it is requested that this objection to the Disclosure be withdrawn.

The rejection of Claim 7 under 35 U.S.C. 112, second paragraph, as being indefinite is respectfully traversed.

Claim 7 was rejected because it was asserted that the variable "y" was not defined. Claim 7 has been amended to recite, "A scintillator composition comprising, prior to annealing, the composition $(Tb_{1-x-y}Lu_xCe_y)_3Al_5O_{12}$, where $0 < x \leq 0.5$ and y is in the range from about 0.0005 to about 0.2." Support for this amendment will be found at paragraphs [0024], [0047], and [0067] of the Specification.

Paragraphs [0024], [0047], and [0067] have themselves been amended to correct a typographical error in the subscript of the element Tb in some compositions. It is submitted that the typographical error itself would have been obvious to one of ordinary skill in the art because one of ordinary skill in the art would recognize that the total quantity of the elements in parentheses in the chemical composition should equal 1. Moreover, the correction to the equation would be obvious to one of ordinary skill in the art, as the particular composition $(Tb_{1-x-y}Lu_xCe_y)_3Al_5O_{12}$ is, in fact, a subset of the general formula $(G_{1-x-y}A_xRE_y)_aD_zO_{12}$ cited earlier in paragraph [0024]. Thus, the amendments to the Specification are proper and can be entered without adding new matter.

It is thus submitted that the rejection of Claim 7 under 35 U.S.C. 112, second paragraph, as being indefinite no longer applies and should be withdrawn.

The rejection of Claims 3, 9-11, and 13 under 35 U.S.C. 102(a) as being clearly anticipated by WO 01/08453 is respectfully traversed.

WO 01/08453 was also published as English language equivalent CA 2 343 909 A1. Therefore, the present Claims will be distinguished from passages appearing in CA 2 343 909 A1. This Canadian patent is included with an Information Disclosure Statement filed with this Amendment.

CA 2 343 909 A1 is directed to an arrangement of luminescent materials for excitation by means of a radiation source and involving the use of a luminescent material having a Ce-activated garnet structure $A_3B_5O_{12}$, in which the first component A contains at least one element from the group consisting of Y, Lu, Se, La, Gd, Sm, and Tb and the second

component B represents at least one of the elements Al, Ga, and In, and a plurality of the luminescent materials are mixed together. An associated wavelength-converting casting compound and an associated light-source arrangement are further proposed. See Abstract of CA 2 343 909 A1. Nowhere is it taught or suggested that the phosphors be annealed nor that they are transparent or translucent. For example, at page 1, lines 19-21 of the Canadian patent publication, a transparent *casting matrix* is disclosed, but it is not taught that the composition of the underlying luminescent material is a sintered, translucent or transparent ceramic. Moreover, the phosphors disclosed in the reference comprise different materials mixed in a powdered form. See page 5, lines 22-24 of CA 2 343 909 A1. See also page 6, lines 8-14, page 8, lines 1-4, and page 8, lines 13-19, wherein it is recited that a mixture of luminescent material powders is used, and the mixture is embedded in a casting resin or resins.

By contrast, independent Claims 3, 9, 11, and 13 have been amended to recite "A transparent or translucent sintered ceramic scintillator composition...". See, for example, paragraphs [0052] and [0071] of the Application as originally filed. No such transparent or translucent annealed ceramic composition is taught or suggested in WO 01/08453. Therefore, it is submitted that Claims 3, 9, 11, and 13 are patentable over WO 01/08453.

Claim 10 is dependent upon Claim 9. When the recitations of Claim 10 are considered in combination with the recitations of Claim 9, it is submitted that Claim 10 is likewise patentable over WO 01/08453.

For the above reasons, it is requested that the rejection of Claims 3, 9-11, and 13 under 35 U.S.C. 102(a) as being clearly anticipated by WO 01/08453 be withdrawn.

The rejections of Claims 1, 3, 5, 6, 8, 9, and 13 under 35 U.S.C. 102(a) as being clearly anticipated by WO 01/08452 and by its English language equivalent US 6,669,866 are respectfully traversed.

WO 01/08452 and English language publication US 6,669,866 are equivalent, as indicated by the Office. Therefore, the present Claims will be distinguished from passages appearing in US 6,669,866, but it is submitted that the reasons given below equally distinguish the present Claims from WO 01/08452.

US 6,669,866 is directed to a yellow-emitting garnet phosphor for excitation by a light source with short wavelengths in the visible blue spectral region, with the result that white light is generated. A lamp (primarily a fluorescent lamp) or an LED (light-emitting diode) is particularly suitable as the light source. (See Abstract.) In each of the examples given, the composition is milled and screened through a fine mesh, and it is apparent that the phosphor is intended to be used as a powder. There is no teaching or suggestion of transparent or translucent sintered ceramic scintillators of any composition.

By contrast, each of Claims 1, 3, 8, 9, and 13 have been amended to recite "A transparent or translucent sintered ceramic scintillator composition..." Thus, it is submitted that Claims 1, 3, 8, 9, and 13 as herein amended are patentable over both WO 01/08452 and US 6,669,866.

Claims 5 and 6 are dependent upon Claim 3. When the recitations of Claims 5 and 6 are considered in combination with the recitations of Claim 3, it is submitted that Claims 5 and 6 are likewise patentable over both WO 01/08452 and US 6,669,866.

For the above reasons, it is requested that the rejections of Claims 1, 3, 5, 6, 8, 9, and 13 under 35 U.S.C. 102(a) as being clearly anticipated by both WO 01/08452 and US 6,669,866 be withdrawn.

The rejection of Claims 2 and 3 under 35 U.S.C. 102(b) as being clearly anticipated by U.S. 4,807,241 is respectfully traversed.

U.S. 4,807,241 is directed to cathode ray tubes and to luminescent screens for use in such tubes. See col. 1, lines 9-11. Light trapping within a phosphor layer is exploited advantageously in a luminescent screen with enhanced brightness. The luminescent screen includes a monocrystalline or amorphous phosphor layer on which the electron beam is made incident to generate a scannable spot of light, and the phosphor layer comprises an array of elongated rod-light elements each having at one end an output face from which light escapes, and a reflective coating covers the other surfaces of the element. See col. 2, lines 12-29. One or more monocrystalline phosphor layers are used, col. 5, lines 6-25, or an amorphous or glass-like material is used, col. 5, lines 26-35. Rod-like elements are fabricated by growing epitaxially a layer of monocrystalline core material on a monocrystalline substrate, col. 5, line

59 to col. 6, line 2. Liquid-phase epitaxy is used for growing single crystals, see col. 6, lines 38-48. The two examples cited in U.S. 4,807,241 also describe LPE growth. Nowhere is a transparent or translucent sintered ceramic scintillator composition taught or suggested.

By contrast, each of independent Claims 2 and 3 have been amended to recite "A transparent or translucent sintered ceramic scintillator composition..." No such transparent or translucent sintered ceramic composition is taught or suggested by U.S. 4,807,241. Therefore, it is submitted that Claims 2 and 3 are both patentable over U.S. 4,807,241.

For these reasons, it is requested that the rejection of Claims 2 and 3 under 35 U.S.C. 102(b) as being clearly anticipated by U.S. 4,807,241 be withdrawn.

The rejection of Claims 1, 3, 8-11, and 13 under 35 U.S.C. 102(e) as being anticipated by U.S. 6,596,195 is respectfully traversed.

U.S. 6,596,195 is directed to a rare earth-activated terbium-containing garnet phosphor that is capable of absorbing radiation in the range from near UV to blue and emitting a broad spectrum of visible light in the range from about 490 nm to about 770 nm. A light source combining a UV/blue LED and this phosphor can provide a white light that is on or near the Planckian locus and may be useful for general illumination. See Abstract. The reference teaches using the compositions as a phosphor in conjunction with a UV/blue LED, in the form of substantially uniformly dispersed particles in a transparent casting, or the phosphor particles are applied to the LED or dispersed in only a portion of the transparent casting. See col. 7, lines 6-11. Although some of the materials are calcined in an oxidizing atmosphere and then fired, see col. 3, lines 5-10, there is no teaching or suggestion that the phosphors so produced are transparent or translucent sintered ceramic scintillator compositions. Moreover, there is no teaching or suggestion that the compositions disclosed in U.S. 6,596,195 are capable of being sintered into a transparent or translucent ceramic.

By contrast, Claims 1, 3, 8, 9, 11, and 13 have been amended to recite "A transparent or translucent sintered ceramic scintillator composition..." No such transparent or translucent sintered ceramic scintillator composition is taught or suggested by U.S. 6,596,195. Therefore, it is submitted that Claims 1, 3, 8, 9, 11, and 13 are patentable over U.S. 6,596,195.

Claim 10 is dependent upon Claim 9. When the recitations of Claim 10 are considered in combination with the recitations of Claim 9, it is submitted that Claim 10 is likewise patentable over U.S. 6,596,195.

For the above reasons, it is requested that the rejection of Claims 1, 3, 8-11, and 13 under 35 U.S.C. 102(e) as being anticipated by U.S. 6,596,195 be withdrawn.

The rejection of Claims 1-11 and 13 under 35 U.S.C. 102(e) as being anticipated by U.S. 6,630,077 is respectfully traversed.

U.S. 6,630,077 is directed to terbium- or lutetium-containing phosphors and scintillators having a garnet structure activated with rare-earth metal ions useful for the detection of high-energy radiation. See col. 1, lines 7-11. In some configurations, fired material is pulverized afterwards to provide a scintillator in a powder form for further processing into X-ray detector elements. The powder may be cast with the addition of a binder into a green element, then further sintered at temperature in the range from about 1500°C to about 1800°C to increase the density of the element. See col. 6, lines 39-45. However, there is no teaching or suggestion that the element is either translucent or transparent, particularly for the compositions claimed by Applicants in the present Application. There is also no method or rule described in US 6,630.077 (or elsewhere) for predicting which ceramic scintillator compositions become transparent or translucent when sintered. At col. 9, lines 33-39, U.S. 6,630,077 recites that after firing, a scintillator of [the invention of U.S. 6,630,077] may be further pulverized to produce the scintillator in powder form which can be pressed into compacted scintillators for use in detectors of X-ray CT systems. The powder may be compacted by a method such as hot pressing or hot isostatic pressing into desired shaped bodies. However, when compacted, the compositions described in U.S. 6,630,077 need not necessarily be transparent or translucent, nor are they described as such. Furthermore, it is not necessary that they be transparent or translucent to be useful in detectors of X-ray CT systems. To the extent that transparency is desirable, U.S. 6,630,077 describes a composition suitable for single crystal growth at col. 9, lines 46-54. Therefore, no transparent or translucent sintered ceramic scintillator composition is taught or suggested by U.S. 6,630,077.

By contrast, each independent Claim 1, 2, 3, 7, 8, 9, 11, and 13 has been amended to recite "A transparent or translucent sintered ceramic scintillator composition...". No such transparent or translucent sintered ceramic scintillator composition is taught or suggested by U.S. 6,630,077. Therefore, it is submitted that Claims 1, 2, 3, 7, 8, 9, 11, and 13 are parentable over U.S. 6,630,077.

Claims 4-6 are dependent upon Claim 3. When the recitations of Claims 4-6 are considered in combination with the recitations of Claim 3, it is submitted that Claims 4-6 are likewise patentable over U.S. 6,630,077.

Claim 10 is dependent upon Claim 9. When the recitations of Claim 10 are considered in combination with the recitations of Claim 9, it is submitted that Claim 10 is likewise patentable over U.S. 6,630,077.

For the above reasons, it is requested that the rejection of Claims 1-11 and 13 under 35 U.S.C. 102(e) as being anticipated by U.S. 6,630,077 be withdrawn.

The rejection of Claims 1-13 under 35 U.S.C. 102(e) as being anticipated by U.S. 6,793,848 is respectfully traversed.

As shown by the accompanying Affidavits of Charles David Greskovich and Steven Jude Duclos, coinventors of U.S. 6,793,848, James Scott Vartuli and Robert Joseph Lyons, coinventors of U.S. 6,793,848 and coinventors of this Application, and Carl Vess, a technician who assisted in preparing compositions claimed in this Application, the invention disclosed but not claimed in U.S. 6,793,848 but claimed in this Application was derived solely from the inventors of this Application. Therefore, it is requested that the rejection of Claims 1-13 under 35 U.S.C. 102(e) as being anticipated by U.S. 6,793,848 be withdrawn.

The rejection of Claims 1, 3, and 5-13 under 35 U.S.C. 103(a) as being unpatentable over WO 01/08453 is respectfully traversed.

WO 01/08453 was published as English language equivalent CA 2 343 909 A1, which, as described above, is directed to an arrangement of luminescent materials for excitation by means of a radiation source. Nowhere is it taught or suggested that the phosphors be annealed nor that they are transparent or translucent.

By contrast, Claims 1, 3, 7, 8, 9, 11, 12, and 13, as amended, each recite "A transparent or translucent sintered ceramic scintillator composition ...". Nowhere is such a composition taught or suggested by the cited reference, at least in its English language equivalent publication. Thus, it is submitted that Claims 1, 3, 7, 8, 9, 11, 12, and 13 are patentable over WO 01/08453.

Claims 5 and 6 are dependent upon Claim 3. When the recitations of Claims 5 and 6 are considered in combination with the recitations of Claim 3, it is submitted that Claims 5 and 6 are likewise patentable over WO 01/08453.

Claim 10 is dependent upon Claim 9. When the recitations of Claim 10 is considered in combination with the recitations of Claim 9, it is submitted that Claim 10 is likewise patentable over WO 01/80453.

For the above reasons, it is requested that the rejection of Claims 1, 3, and 5-13 under 35 U.S.C. 103(a) as being unpatentable over WO 01/08453 be withdrawn.

The rejection of Claims 1, 3, and 5-13 under 35 U.S.C. 103(a) as being unpatentable over WO 01/08452 or U.S. 6,669,866 is respectfully traversed.

US 6,669,866 is directed to a yellow-emitting garnet phosphor for excitation by a light source with short wavelengths in the visible blue spectral region, with the result that white light is generated. A lamp (primarily a fluorescent lamp) or an LED (light-emitting diode) is particularly suitable as the light source. (See Abstract.) In each of the examples given, the composition is milled and screened through a fine mesh, and it is apparent that the phosphor is intended to be used as a powder. There is no teaching or suggestion of transparent or translucent sintered ceramic scintillators of any composition.

By contrast, Claims 1, 3, 7, 8, 9, 11, 12, and 13, as amended, each recite "A transparent or translucent sintered ceramic scintillator composition ...". Nowhere is such a composition taught or suggested by the cited reference, at least in its English language equivalent publication. Thus, it is submitted that Claims 1, 3, 7, 8, 9, 11, 12, and 13 are patentable over WO 01/08452 and U.S. 6,669,866.

Claims 5 and 6 are dependent upon Claim 3. When the recitations of Claims 5 and 6 are considered in combination with the recitations of Claim 3, it is submitted that Claims 5 and 6 are likewise patentable over WO 01/08452 and U.S. 6,669,866.

Claim 10 is dependent upon Claim 9. When the recitations of Claim 10 is considered in combination with the recitations of Claim 9, it is submitted that Claim 10 is likewise patentable over WO 01/08452 and U.S. 6,669,866.

For the above reasons, it is requested that the rejection of Claims 1, 3, and 5-13 under 35 U.S.C. 103(a) as being unpatentable over WO 01/08452 and U.S. 6,669,866 be withdrawn.

The rejection of Claim 3 under 35 U.S.C. 103(a) as being unpatentable over U.S. 6,246,744 is respectfully traversed.

U.S. 6,246,744 teaches a scintillator composition comprising praseodymium activated $Lu_3Al_5O_{12}$. The Office admitted that the reference does not teach the amount of praseodymium, but that one of ordinary skill in the art knows it should be present in that amount which activates the scintillator, which would be expected to overlap or be that claimed.

Claim 3 has been amended to omit the recitation of praseodymium (Pr). Thus, it is submitted that this rejection no longer applies.

For the above reasons, it is requested that the rejection of Claim 3 under 35 U.S.C. 103(a) as being unpatentable over U.S. 6,246,744 be withdrawn.

The rejection of Claims 2-4 and 13 under 35 U.S.C. 103(a) as being unpatentable over U.S. 6,278,832 is respectfully traversed.

The Office asserted that U.S. 6,278,832 teaches a scintillator composition comprising cerium activated $Lu_3Al_5O_{12}$, and that, while the reference does not teach an amount of cerium, one of ordinary skill in the art would know that it should be present in the amount which activates the scintillator, which would be expected to overlap or be that claimed.

However, the essence of the invention of U.S. 6,278,832 is a scintillating material based on crystals of oxyorthosilicates. The result of the invention is to increase light output of the luminescence, and raise the effectiveness of the introduction of scintillating crystal luminescent radiation into a glass waveguide fiber, prevention of cracking of crystals in the production of elements, creation of waveguide properties in scintillating elements, and exclusion of expensive mechanical polishing of their lateral surface. (See abstract.) The essential technical drawback cited for known scintillating crystals and crystals of the prototype is the growing of crystals from melting stock, containing an extremely expensive reagent with high chemical purity. The common drawback of these materials is also the impossibility of creating scintillating waveguide elements at the expense of refractive index gradient along the waveguide cross section. See col. 2, lines 40-47. The technical task of the invention is the increase of the light output of luminescence, decrease of the time of luminescence of ions Ce^{3+}, increase of the reproducibility of properties of single grown crystals, decrease of the cost of source melting stock for growing crystal scintillators, etc. See col. 2, lines 50-65. The technical result is achieved due to the growing of crystals in structural type Lu_2SiO_5 with a spatial group B2/b (Z=8), as well as at the expense of an advantageous content of Ce^{3+} ions in a crystal. See col. 2, line 66 to col 3, line 2. The entire thrust of the invention described in this reference concerns transparent crystalline scintillators, not transparent or translucent sintered ceramic scintillators.

By contrast, Claims 2, 3, and 13 as herein amended, each recite, "A transparent or translucent sintered ceramic sintillator composition...". No such transparent or translucent sintered ceramic sintillator composition is shown or suggested by U.S. 6,278,832. Thus, it is submitted that Claims 2, 3, and 13 are patentable over U.S. 6,278,832.

Claim 4 is dependent upon Claim 3. When the recitations of Claim 4 are considered in combination with the recitations of Claim 3, it is submitted that Claim 4 is likewise patentable over U.S. 6,278,832.

For the above reasons, it is requested that the rejection of Claims 2-4 and 13 under 35 U.S.C. 103(a) as being unpatentable over U.S. 6,278,832 be withdrawn.

The rejection of Claim 3 under 35 U.S.C. 103(a) as being unpatentable over U.S. 6,552,487 is respectfully traversed.

U.S. 6,552,487 is directed to a phosphor for light sources and an associated light source in accordance with the preamble of claim 1, which recites, "Phosphor for excitation by a light-emitting radiation source, the emission from which lies in the short-wave optical spectral region between 420 and 490 nm, having a garnet structure $A_3B_5O_{12}$, which is activated with Ce, ...". The construction of a light source for white light is shown in Figure 4. The light source is a semiconductor element (chip 12) of the type InGaN having a peak emission wavelength of 465 nm and a first and a second electrical terminal 2, 3, the semiconductor element being embedded in a basic housing 8, which is intransmissive for light, in the region of a recess 9. The recess 9 is filled with a potting mass 5 which comprises as main constituents an epoxy casting resin (80 to 90% by weight) and phosphor pigments 6 (less than 15% by weight) of the phosphor type (3). See col. 5, lines 26-38. An exemplary embodiment for production mixes components which are comminuted together with 150 g of aluminum oxide beads with a diameter of 10 mm in a 250 ml wide-necked PE flask. The mixture is annealed in a covered corundum crucible for 3 h at 1550°C under forming gas (nitrogen containing 2.3% by volume hydrogen). The annealed material is milled in an automatic mortar mill and screened through a screen with a mesh width of 53 μm. This is followed by a second anneal for 3 h at 1500°C under forming gas (nitrogen containing 0.5% by volume hydrogen). Then, milling and screening is carried out as after the first anneal. See col. 5, line 55 to col. 6, line 8. There is no teaching or suggestion of a transparent or translucent sintered ceramic scintillator.

By contrast, Claim 3 has been amended to recite "A transparent or translucent sintered ceramic sintillator composition...". No such transparent or translucent sintered ceramic sintillator composition is taught or suggested by U.S. 6,552,487. Therefore, it is submitted that Claim 3 as herein amended is patentable over U.S. 6,552,487.

For the above reasons, it is requested that the rejection of Claim 3 under 35 U.S.C. 103(a) as being unpatentable over U.S. 6,552,487 be withdrawn.

The rejection of Claims 1, 3, 8-11 and 13 under the judicially-created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. 6,596,195 is respectfully traversed.

U.S. 6,596,195 is directed to a rare-earth terbium-containing garnet phosphor capable of absorbing radiation in the range from near UV to blue and emitting a broad spectrum of visible light in the range from about 490 nm to about 770 nm. The emission of the phosphor under an excitation at 450 nm exhibits a peak in the range of maximum sensitivity of the human eye. A light source combining a UV/blue LED and this phosphor can provide a white light that is on or near the Planckian locus and may be useful for general illumination. (Abstract.) Although the material is calcined (see col. 3, lines 5-14; col. 4, lines 26-38, and col. 5, line 42 to col. 6, line 13), there is no teaching or suggestion of a transparent or translucent sintered ceramic scintillator. Rather, in one embodiment, a transparent casting 160 comprising an epoxy, a silicone, or glass 180 in which there are dispersed substantially uniformly particles 200 of a phosphor of the type disclosed in the reference is used. Particles of a light scattering material, such as TiO_2 or Al_2O_3 may be included in the transparent casting among the phosphor particles to improve the uniformity of light emitted from the light source. See col. 7, lines 6-16.

By contrast, Claims 1, 3, 8, 9, 11, and 13 have been amended to recite "A transparent or translucent sintered ceramic scintillator composition ...". No such material is taught or suggested by U.S. 6,596,195, nor by any of claims 1-13 of that reference, none of which recite a transparent or translucent sintered ceramic composition. Therefore, it is submitted that Claims 1, 3, 8, 9, 11, and 13 are not obvious over claims 1-13 of U.S. 6,596,195, and are patentable thereover.

Claim 10 is dependent upon Claim 9. When the recitations of Claim 10 are considered in combination with the recitations of Claim 9, it is submitted that Claim 10 is likewise not obvious over claims 1-13 of U.S. 6,596,195, and is patentable thereover.

For the above reasons, it is requested that the rejection of Claims 1, 3, 8-11 and 13 under the judicially-created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. 6,596,195 be withdrawn.

The rejection of Claims 1-7, 9-11, 13, and 14 under the judicially-created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10, 24-29, 32, and 33 of U.S. 6,630,077 is respectfully traversed.

U.S. 6,630,077 is directed to terbium- or lutetium-containing phosphors and scintillators having a garnet structure activated with rare-earth metal ions useful for the detection of high-energy radiation. See col. 1, lines 7-11. In some configurations, fired material is pulverized afterwards to provide a scintillator in a powder form for further processing into X-ray detector elements. The powder may be cast with the addition of a binder into a green element, then further sintered at temperature in the range from about 1500°C to about 1800°C to increase the density of the element. See col. 6, lines 39-45. However, there is no teaching or suggestion that the element is either translucent or transparent, particularly for the compositions claimed by Applicants in the present Application. There is also no method or rule described in US 6,630.077 (or elsewhere) for predicting which ceramic scintillator compositions become transparent or translucent when sintered. At col. 9, lines 33-39, U.S. 6,630,077 recites that after firing, a scintillator of [the invention of U.S. 6,630,077] may be further pulverized to produce the scintillator in powder form which can be pressed into compacted scintillators for use in detectors of X-ray CT systems. The powder may be compacted by a method such as hot pressing or hot isostatic pressing into desired shaped bodies. However, when compacted, the compositions described in U.S. 6,630,077 need not necessarily be transparent or translucent, nor are they described as such. Furthermore, it is not necessary that they be transparent or translucent to be useful in detectors of X-ray CT systems. To the extent that transparency is desirable, U.S. 6,630,077 describes a composition suitable for single crystal growth at col. 9, lines 46-54. Therefore, no transparent or translucent sintered ceramic scintillator composition is taught or suggested by U.S. 6,630,077. Moreover, none of claims 1-10, 24-29, 32, and 33 of U.S. 6,630,077 teach, suggest, or recite a transparent or translucent sintered ceramic scintillator composition.

By contrast, Claims 1-3, 7, 9, 11, and 13 have each been amended to recite "A transparent or translucent sintered ceramic scintillator composition ...", which is not taught, suggested, or recited by U.S. 6,630,077 or by claims 1-10, 24-29, 32, and 33 of U.S. 6,630,077. It is therefore submitted that Claims 1-3, 7, 9, 11, and 13 are each allowable over U.S. 6,630,077.

Claims 4-6 are each dependent upon Claim 3, as herein amended. When the recitations of Claims 4-6 are considered in combination with those of Claim 3, it is submitted that Claims 4-6 are likewise allowable over U.S. 6,630,077.

Claims 10 is dependent upon Claim 9, as herein amended. When the recitations of Claim 10 are considered in combination with those of Claim 9, it is submitted that Claim 10 is likewise allowable over U.S. 6,630,077.

Claim 14 is dependent upon Claim 13 as herein amended. When the recitations of Claim 14 are considered in combination with those of Claim 13, it is submitted that Claim 14 is likewise patentable over U.S. 6,630,077.

For the above reasons, it is requested that the rejection of Claims 1-7, 9-11, 13, and 14 under the judicially-created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10, 24-29, 32, and 33 of U.S. 6,630,077 be withdrawn.

The rejection of Claims 1-24 under the judicially-created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 19-27, 37, 54, and 72 of US 6,793,848 is respectfully traversed.

Claims 1 and 19-27 of U.S. 6,793,848 each recite a method for preparing a terbium or lutetium containing garnet scintillator. Although claim 1 recites that the method includes annealing, there is no teaching, suggestion, or recitation in the claim of a transparent or translucent sintered ceramic sintillator. Claims 37 and 54 of U.S. 6,793,848 are directed to an annealed scintillator composition, but neither teaches, suggests, or recites a transparent or translucent sintered ceramic sintillator composition. Claim 72 recites a detector element of an x-ray CT scanner comprising the scintillator of Claim 54, but does not teach, suggest, or recite that the sintillator is a translucent or transparent sintered ceramic composition.

By contrast, Claims 1, 2, 3, 7, 8, 9, 11, 12, 13, and 19, as herein amended, each recite "A sintered, transparent or translucent ceramic scintillator..." or contain an essentially similar recitation. Claim 16 is a method claim and has been amended to recite "... annealing a sintered garnet scintillator to a transparent or translucent ceramic...". Thus it is submitted that

Claims 1, 2, 3, 7, 8, 9, 11, 12, 13, 16, and 19 are each patentable over claims 1, 19-27, 37, 54, and 72 of US 6,793,848.

Claims 4-6 are each dependent upon Claim 3. When the recitations of Claims 4-6 are considered in combination with the recitations of Claim 3, it is submitted that Claims 4-6 are likewise patentable over claims 1, 19-27, 37, 54, and 72 of US 6,793,848.

Claim 10 is dependent upon Claim 9. When the recitations of Claim 10 are considered in combination with the recitations of Claim 9, it is submitted that Claim 10 is likewise patentable over claims 1, 19-27, 37, 54, and 72 of US 6,793,848.

Claims 14 and 15 are each dependent upon Claim 13. When the recitations of Claims 14 and 15 are considered in combination with the recitations of Claim 13, it is submitted that Claims 14 and 15 are likewise patentable over claims 1, 19-27, 37, 54, and 72 of US 6,793,848.

Claims 17 and 18 are each dependent upon Claim 16. When the recitations of Claims 17 and 18 are considered in combination with the recitations of Claim 16, it is submitted that Claims 17 and 18 are likewise patentable over claims 1, 19-27, 37, 54, and 72 of US 6,793,848.

Claims 20-24 are each dependent upon Claim 19. When the recitations of Claims 20-24 are considered in combination with the recitations of Claim 19, it is submitted that Claims 20-24 are likewise patentable over claims 1, 19-27, 37, 54, and 72 of US 6,793,848.

For the above reasons, it is requested that the rejection of Claims 1-24 under the judicially-created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 19-27, 37, 54, and 72 of US 6,793,848 be withdrawn.

Applicants note that in U.S. Patent Publication No. 2004/0084655A1 for this Application, the symbol "Th" (thorium) has been substituted for "Tb" (terbium) in claims 3, 13, and 17 of the printed publication. This appears to be error on the part of the Office, and Applicants request that this error be corrected

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



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